



Clean Watersheds Needs Survey (CWNS) 2008 Guide for Entering Decentralized Wastewater Treatment System (Category XII) Needs

In Clean Watersheds Needs Survey (CWNS) 2004, thirty states reported needs in the category Decentralized Wastewater Treatment System needs (called category VII-L Individual/Decentralized Sewage Treatment in the CWNS 2004). To increase participation in 2008, a new web-based data entry system will be used. The system will allow local users (e.g. municipalities, conservation districts, land trusts) and multiple state users (e.g. state onsite coordinators entering decentralized wastewater treatment system needs) to submit CWNS data to their State CWNS coordinator electronically.

Based on some states' experiences from CWNS 2004, the following provides resources, methodologies, and best practices for collecting and entering decentralized wastewater treatment needs and costs information into the CWNS 2008 system.

Getting Started

Data needs to be gathered from a variety of sources. Potential resources include:

- State and municipal health departments
- Permits issued by municipalities or states
- Onsite wastewater treatment engineers and installers
- State offices responsible for rural issues
- Studies conducted by state agencies and outside organizations (e.g., annual reports, Association of Cities and Towns report)
- Municipal and state regulations for decentralized wastewater treatment
- People with historical knowledge of community's wastewater treatment practices

Eligibility Requirements

This category includes the costs associated with the construction of new systems, or the repair or replacement of existing decentralized wastewater treatment systems including:

- **Clustered Systems:** A wastewater collection and treatment system under some form of common ownership that collects wastewater from two or more dwellings or buildings and conveys it to a treatment and dispersal system located on a suitable site near the dwellings or buildings.
- **Onsite Wastewater Treatment Systems (OWTS):** A system relying on natural processes and/or mechanical components to collect, treat, and disperse or reclaim wastewater from a single dwelling or building.

Category XII does not include the needs and costs to change a service area from decentralized wastewater treatment to a publicly owned treatment system. Needs to construct a publicly owned centralized collection and treatment system should be reported in Category I- Secondary Wastewater Treatment and/or Category II- Advanced Wastewater Treatment. Needs to install sewers to connect the service area to an existing collection system are reported in category IV-A- New Collector Sewers and Appurtenances and IV-B- New Interceptor Sewers and Appurtenances. You must be able to document plans to connect the area to centralized treatment or a cluster system (for OWTS). If you cannot provide documentation, assume that the OWTS will be repaired or replaced with new OWTS or clustered system.

To keep the data in the CWNS consistent and credible, as well as comparable across the country, it is required to meet the following documentation criteria.

1. **Description of the water quality or public health problem.** Document that there is an existing need to prevent or abate a water quality or public health problem. For example, complaints and permits issued by municipal and/or state authorities to identify and abate threats to water quality or public health would be sufficient. The examples in the next section provide additional details.
2. **Location of the problem.** The location must be identified as follows¹:
 - a. For each Clustered System, a single latitude/longitude point representing the centroid or front door of the system is required.
 - b. For OWTs, EPA requires states to submit one of the following:
 - i. A list of latitudes and longitudes for each known OWTs.
 - ii. A list of street addresses or street blocks for each known OWTs.
 - iii. A paper or electronic map indicating the areas served by OWTs in your jurisdiction. (A tool for drawing an electronic map will be available within the data entry system.)
 - iv. If a project area applies to a complete town or county, a latitude/longitude for the town centroid can be submitted.
3. **The solution(s) to the problem.** Possible solution will be to construct new system(s), repair existing system(s), alter existing systems, or replace existing system(s). If there is no specific documentation to identify recommended solution, either:
 - a. Assume the solution is to repair the existing system (with no significant alterations to system) if no documentation exists on need to replace it, or
 - b. Apply a ratio if the state has collected sample data within an area (e.g. if the state knows an average of 40% of OWTs need replaced in a county or watershed, it can assume 40% of all OWTs with similar problems in same area also need replacement). (The examples in the next section provide additional details.)
4. **The cost of each solution.** Specific costs are needed for each proposed solution. At a minimum, there should be cost estimates for repair, replacement, and new systems. If additional solutions, such as alterations or innovative/advanced treatment, are included, then the solutions must be clearly defined and costs identified. (The examples in the next section provide additional details.)
5. **The basis of the cost.** The source of the cost data (e.g., engineer's estimates, costs from comparable practices, equipment supplier or installer's estimates, permits) for each solution must be documented.
6. **The total cost.** The total cost of all decentralized wastewater treatment needs documented for the area must be provided.

¹ Decentralized treatment needs location data requirements will only be enforced in 2008 for new projects and projects that require redocumentation of needs.

Best Practices for Documenting Decentralized Needs and Costs

Note: Communities with a population of fewer than 10,000 people are considered small communities and can use a simplified methodology to collect and document needs. For more information, see the CWNS 2008 Guide for Entering Small Community Needs available at <http://www.epa.gov/cwns/cwns2008.htm>

In many states the CWNS program and the decentralized wastewater treatment program are the responsibility of different agencies. In addition, many state decentralized programs are managed at the municipal (e.g., county, town) or regional level. To successfully report decentralized needs, the state CWNS coordinator needs to communicate effectively and work cooperatively with decentralized program staff at the state, regional, or municipal level.

CWNS 2004 Examples

Needs

Several states conducted surveys of municipal health departments (Attachments 1 and 2). In many states, municipal health departments can estimate of the number of OWTs in their municipality and the number of systems with malfunctions based on permit data, complaints issued, and historical knowledge of their community. They may also be able to the cost of various solutions to malfunctions based on information included in permit applications. To maximize participation, states recommended calling health departments as a follow-up to the mail surveys.

The survey results provided a snapshot of what a municipality's needs and costs are in a given year. For example, in 2004:

- In Indiana, the number of OWTs needs in 2004 was based on the total response to the survey line for "Number of units/homes with failing/no septic system." An average cost for the state was calculated based on the costs reported on the line "Average cost to replace/install a septic system in your county."
- In New Jersey, the number of OWTs with needs was based on the number of permits issued for "repairs," and "alterations (malfunctions)" reported in its survey. This information was used to determine the yearly turn-over rate for each municipality. As New Jersey continues to collect yearly data, they will be able to calculate an average yearly turnover rate that they will use to document needs.

Based on the work of these states, EPA is providing a model (Attachment 3) which states can use to collect data from municipalities and/or other agencies on decentralized wastewater treatment needs

Costs

Specific costs are needed for each proposed solution. When collecting cost information, at a minimum, determine an average cost for (1) repairs and (2) new or replacement systems. If possible, determine an average cost for other solutions (e.g. alterations, upgrades to advanced treatment technologies) and/or common types of systems (e.g. gravity in-ground systems, in-ground systems requiring a pump, mound systems) installed in your state. Solutions and/or system types must be clearly explained and costs identified.

Installers and engineers can provide the information on the amount of money charged to install various types of individual sewage treatment systems based on their professional judgment.

For example, in Minnesota, the cost per failing system was determined by a survey of Individual Wastewater Treatment System installers as part of their recertification training. The survey asked for actual replacement cost of systems for the four most common types of systems in the state. Based on that information, a weighted average (based on estimated percentage of each type of system in the state) of installation cost was determined (Attachment 4 provides a more detailed description).

Additional Methodologies

Needs

Use newly implemented municipal or state regulations to document needs. New regulations that require existing and/or new decentralized wastewater treatment systems to meet more stringent standards can be used to justify the need and support cost estimates. The documentation should include a copy of the regulation and an explanation signed by a qualified municipal or state employee indicating which facilities are affected. Other documentation is needed to justify the costs.

For example, Delaware's draft new regulations (when implemented) would justify the need to replace all identified cesspools and seepage pits within the stated areas.

All cesspools or seepage pits are prohibited within Indian River, Indian River Bay, Rehoboth Bay and Little Assawoman Bay watersheds and shall be replaced in accordance with the Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems and these Regulations of the Pollution Control Strategy for the Indian River, Indian River Bay, Rehoboth Bay and Little Assawoman Bay Watersheds.

The same legislation (when implemented) would also justify using cost estimates specific to the required type of system (which may be a more expensive solution).

All innovative and alternative onsite wastewater treatment and disposal systems having flows of less than or equal to 2,500 gallons per day must comply with Performance Standard Nitrogen level 3.

Costs

Estimate the cost based on previous comparable projects completed within the last two years. This estimate of cost must be based on the cost of recently bid or completed projects that are similar in size, scope, and geographic area (e.g., county, watershed) and for which detailed cost data are available. Costs are solution specific (e.g., repairs must be based on repair costs only). The type of decentralized system (e.g. gravity in-ground systems, in-ground systems requiring a pump, mound systems, clustered system) should also be considered.

States must present at least three similar projects bid or completed within the last two years. If possible, state should present three similar projects bid or completed for both repair and replacement costs for each type of system common in their state. General estimates can be used if they are statistically supported by three or more instances of documented costs for the same type of system in similar geographic areas (e.g., county, watershed). In some cases, it may be appropriate to extrapolate costs for larger geographic areas (e.g. region, state). Extrapolating will be permitted for reasonably analogous geographic areas (e.g., similar soil types).

Note: This methodology must be pre-approved by your EPA region and EPA headquarters before entering the data into the system.

Estimate costs using CWNS cost curves. The following cost curves will be available within the CWNS data entry system for estimating the costs to rehabilitate or install new OWTS and Clustered Systems:

- All OWTS (mixture of conventional and innovative systems)
- Conventional OWTS (traditional gravity-fed tank and trench system)
- Innovative OWTS (any type of OWTS with technology superior to a conventional OWTS)
- Clustered systems

Attachment 5 identifies the required and optional data needed in order for the state coordinator to use the cost curves.

Entering CWNS Data

Data entry for the next CWNS will be from February 5 through October 27, 2008. For the first time, an Internet-based data entry system will be used. State CWNS coordinators, other state personnel, municipalities, and other facilities and organizations will be able to submit CWNS data to their state CWNS coordinator electronically.

EPA will review methodologies for documenting needs and costs in CWNS 2008 proposed by states from February - April 2008. For more information, visit <http://www.epa.gov/cwns/method.htm>. If you would like your proposed methodologies reviewed, contact EPA (cwns@epa.gov) as early as possible.

For More Information

Visit <http://www.epa.gov/cwns> to learn more about the Clean Watersheds Needs Survey

- Access data from previous surveys
- Find contact information for state and EPA regional CWNS coordinators at <http://www.epa.gov/cwns/whereyoulive.htm>
- Stay updated about CWNS 2008 at <http://www.epa.gov/cwns/cwns2008.htm>

Sign-up to receive updates by e-mail by contacting cwns@epa.gov.

**Attachment 1:
Example Surveys from Indiana and Minnesota**

Date

Addressee
Building
Address 1
City, IN. Zip

Dear :

Re: 2004 Clean Water Needs Survey

Dear County Health Officer:

As an Indiana County Health Officer you are being asked to help Indiana in a national survey of clean water needs. Your role in this survey is to as accurately as possible document the needs of your county for point and nonpoint source needs. Enclosed is a one page survey to help you document your needs. Please think about the entire county when completing the survey, and indicate the type of need. One survey should be completed per area.

Each funding source fills a niche that we hope all communities can take advantage of for help with their water quality problems. The State Revolving Fund program helps with both grants and loans. We are asking that you share your counties' projects with us to include in our survey. Only needs as of January 1, 2004 should be listed. That is, only projects where construction did not commence until January 1, 2004 are eligible.

Also included is a list of qualifying project categories that we are looking for needs. Please feel free to contact either of us regarding your projects. Please return the questionnaire as soon as possible. Please return your questionnaire on or before July 1, 2004.

We look forward to working with you on this project.

Sincerely,

Arthur Carter
CWNS Project Co-Coordinator
(317) 233-2474

Shelley L. Love
CWNS Project Co-Coordinator
(317) 232-4396

Enclosures



Indiana State Revolving Fund Clean Watershed Needs Survey

County Environmental Health Department

Name of County: _____

	Single Family Residential	Mobile Home Park	Multi Family Residence (Apartment)	School	Commercial	Other
Number of units/homes with failing/no septic system						
Average cost to replace/install a septic system in your county						
Sewer line available (yes/no)						
Location of connection (Name of WWTP)						
Number of units close to sewer line						
Distance (in feet) to cost-effectively connect farthest home to sewer line						

Respondent Information:

Form Completed by: _____ Phone Number: _____

Title: _____ County: _____

Please mail this completed form to:
Shelley Love
State Revolving Fund Loan Programs
Clean Water Needs Survey
100 N. Senate Ave. Room 1275
Indianapolis, Indiana 46204
Any questions please call: (317) 232-4396

Questions from Minnesota Survey

Note: Minnesota requires municipalities to report this information annually

Local Government Unit (LGU) Name	
LGU Type 1= county 2= city 3= township 4= other	
Maintenance/ Pumping Program 1= yes	
Number of Full Time Residences with Individual Sewage Treatment Systems (ISTS)	
Number of Seasonal Residences with ISTS	
Number of Other Establishments with ISTS	
% Failing Systems	
Total Failing Systems	
% Imminent Threat to Public Health and Safety	
Total Imminent Threat to Public Health and Safety	

Attachment 2: New Jersey's Onsite Clean Watersheds Needs Survey Goal and Methods

The 2004 Clean Watersheds Needs Survey (CWNS) was the first survey to specifically identify Individual/Decentralized Sewage Treatment as a category. As such, New Jersey believed that it was important to participate and support the national effort that promoted this new category. The challenge New Jersey faced was that its data was not in an appropriate form for the existing database and documentation requirements. Through its effort to translate the existing and available information to fit into the CWNS system, New Jersey identified a strategy to address onsite wastewater treatment system (OWTS) needs in the CWNS as a function of management.

New Jersey made the distinction between OWTS Needs (single family) and Decentralized Needs (small community systems). In New Jersey, community systems have been regulated and required to comply with water quality standards for 25 years. New Jersey decided to focus on single family residences.

Every year OWTSs fail. When they fail, they are generally fixed quickly. Instead of focusing on itemized lists of locations with malfunctions and assessing the different solutions for each system, New Jersey developed a logical approach to predicting what will likely be needed to fix OSWTS infrastructure failures in the future.

Each municipality (or other defined region) is considered a management district responsible for managing the systems that fail each year. For each, a failure rate can be determined by calculating the average number of permits to fix malfunctions issued each year. New Jersey collected information about the number of permits issued by using the survey that follows. This failure rate represents municipality's average Need for any one given year.

In order to fit the information into the system, New Jersey translated the data this way:

CWNS Data Field	New Jersey's Translation
Facility	Municipality
Point on Contact	Mayor
Phone number	Phone Number for City Hall
Address	Address for City Hall
Latitude/Longitude	Latitude/Longitude for City Hall
Watershed	Watershed in which City Hall is located
Population	Calculated from the average number of people per house (derived from the census) multiplied against the number of permits for the year. Assumption: one permit was equal to one house.
Flow	Number of permits issued multiplied by the flow for a house that is appropriately sized for the average number of people per house (for example, if 3 people per house was used for population, then the flow for a 3 bedroom house was used.)
Cost	The average cost to fix a malfunction

Contributed by:
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Bureau of Nonpoint Pollution Control
Onsite Wastewater Management Unit
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Onsite Wastewater Annual Report

2004

Contact Information

Health Official Name:	Phone Number:
Health Department Name:	E-mail:
Municipality:	

Permit Information - Permits issued between January 1, 2004 and December 31, 2004.

New System:	
Repair:	
Alteration (expansions):	
Alteration (malfunctions):	
Alternative Technology:	
Commercial:	
Other Permits (explain on separate page):	
Complaints:	

Repair / Alteration (malfunction) Explanation – Total number

Ponding/breakout onto the ground:	
Backup of sewage into residence:	
Failed home inspection:	
Select fill clogged:	
Other:	

Nature of Repair or Alteration – Total number

Tank:		Connecting Line:	
Baffle:		Bed:	
Riser:		Trenches:	
Distribution Tank:		Pump:	
Dosing Tank:		Other:	

Attachment 3:

Model Data Collection Form: Decentralized Wastewater Treatment Systems

Instructions for State:

- This survey is designed to be a model. States should customize it to meet their own needs.
 - For example, the Needs Table can be changed to include your state permit names.
 - There are several highlighted fields for states to enter their state name and contact information.
 - Set the deadline for returning the survey. The deadline for data entry is October 31, 2008. Set the due date for these surveys several months in advance in order to accommodate late returns and allow time for additional communication with respondents.
 - To receive the survey in MS Word, send your request to cwns@epa.gov.
- The state CWNS coordinator and state decentralized staff should work together to collect and enter data. Together, they should contact EPA for pre-approval of their methodology to collect decentralized needs and costs. For more information on the pre-approval process, visit <http://www.epa.gov/cwns/method.htm>.
- Include a cover letter or e-mail with this survey. The letter should highlight why participating in CWNS is important and how the state will use the data collected in this survey.
- Encourage survey recipients to provide as much information as possible.
- Costs are optional because state coordinators can use cost curves and comparable cost estimates to determine costs based on technical data.
 - Follow-up surveys with phone reminders to help improve return rate.

Clean Watersheds Needs Survey

State's Survey of Decentralized Needs

Please complete the following survey of Onsite Wastewater Treatment System (OWTS) and Clustered System needs and costs in your area. The results of this survey will be used by **STATE NAME** to enter data into the national Clean Watersheds Needs Survey (CWNS) 2008. Only the portions of the needs not funded by January 1, 2008 are eligible and should be listed. Please feel free to contact **NAME/EMAIL** regarding your projects. Please return the questionnaire as soon as possible and no later than **DATE**, 2008.

1. Point of Contact

*Authority/ Department Name:			
*Contact Name:			
*Role/ Title:			
*Phone Number:		Fax Number:	
*Address:			
Address 2:			
*City:	*State:	*Zip Code:	
County:			
E-mail:			
Is the population of your community fewer than 10,000 people?		Yes	No

* Required fields

2. Needs Information (Use additional pages if necessary)

This data should show an existing need to prevent or abate a water quality or public health problem.

Complaint Type	Number of Systems	
	OWTS	Clustered
Total Number of Systems with Complaints		

Type of Permit	Number of Permits Issued	
	OWTS	Clustered
Replacement System (will replace existing system)		
New System (will not replace existing system)		
Repair		
Other permits (explain on separate page)		
Total Number of Permits Issued		

3. Cost Information (Use additional pages if necessary)

This data should demonstrate the solution to the problem and the associated costs.

System Repairs

Type of Repair (e.g., tank replacement, drainfield maintenance)	Type of System Indicate OWTS or Clustered (C) and the type of system (e.g., gravity, pressure distribution, sand filter, mound systems, innovative)	Number of Households Served		Total Cost** Explain method for developing cost on separate sheet.
		Resident	Non- resident	
Repair Total				

Replacement Systems

Type of System (e.g. Indicate OWTS or Clustered (C) and the type of system (e.g., gravity, pressure distribution, sand filter, mound systems, innovative)	Number of Households Served		Total Cost** Explain method for developing cost on separate sheet.
	Resident	Non-resident	

New Systems

Type of System (e.g. Indicate OWTS or Clustered (C) and the type of system (e.g., gravity, pressure distribution, sand filter, mound systems, innovative)	Number of Households Served		Total Cost** Explain method for developing cost on separate sheet.
	Resident	Non-resident	

** Optional data.

Documentation

Attach documentation to support your community's needs and costs in your community over the next 20 years (January 1, 2008- December 30, 2028). Documentation should further describe the needs, the reason for the needs (public health problem, water quality problem, or both), cost of the needs, and a description of the environmental benefits of the needed project.

Possible documents include (but are not limited to):

- Signed statement from the health department on health hazards and/or documentation of OWTS failure, water quality problem, and/or violations of safe drinking water standards.
- Application for funding (e.g. USDA Rural Development, State Revolving Fund Loan, US EPA, State grants and loans)
- Capital Improvement Report
- Preliminary engineering study or Plan of Study
- General Plan or Facilities Plan
- Engineer's estimates
- Costs from comparable repairs, replacement systems, and new systems in your jurisdiction.
- Estimates from equipment suppliers or installers
- Permits
- New municipal, state, or federal regulations
- Sanitary surveys

Locations

Attach known locations of decentralized systems. Locations can be identified with one of the following:

1. A list of latitudes and longitudes for each known decentralized system
2. A list of addresses for each known decentralized system.
3. A map indicating the unsewered areas in the area under your jurisdiction.

Attachment 4:
Minnesota Explanation of Cost Estimating for ISTS Installations

DEPARTMENT : POLLUTION CONTROL AGENCY

STATE OF MINNESOTA
Office Memorandum

DATE : December 3, 2004

TO : James R. Anderson

FROM : Mark Wespetal
Individual Sewage Treatment Systems (ISTS) Technical Coordinator

PHONE : 651-296-9322

SUBJECT : Cost Estimating for ISTS Installations

This memo is in response to your questions regarding the determination of the Individual Sewage Treatment System (ISTS) statewide average cost figure that I provided to you for use in the Clean Watershed Needs Survey (CWNS). Every 3 years or so, the MPCA surveys experienced ISTS Installers at the University of Minnesota's Continuing Education Workshops held at geographically balanced locations throughout the state.

Licensed ISTS installers are required to complete the continuing education provided at these workshops in order to have their licenses re-certified. At the workshops, we poll 309 installers and designers to acquire data on the actual installation costs of the four basic types of ISTS systems used in Minnesota: a) gravity In-ground systems, b) In-ground systems requiring a pump, c) At-grade systems, and d) Mound systems. The installers who provide this information have an average of 14 years of experience in ISTS installation.

Estimating the ISTS user population and soil conditions that reflect the number and types of systems installed in the MPCA regions and the metro area, a weighted average installation cost is developed.

Based on the installer polling data collected at workshops over the winter of 2002 and spring of 2003 the average cost to upgrade systems in Minnesota – when design, permitting and plans and specifications costs are included – is \$6,336. Please note that this cost figure is slightly higher (i.e., \$6,336 vs. \$6,320) than the figure used in the February 2004 Report to the Minnesota Legislature entitled *10-Year Plan to Upgrade and Maintain Minnesota's On-site (ISTS) Treatment Systems*.

Let me know if you have any additional questions.

Attachment 5:
Required and Optional Data Elements for CWNS Cost Curves

	Data Elements (R= required; O= optional, NA= not applicable)							
Cost Curves	No. of new systems (resident)	No. of new systems (non-resident)	No. of system rehabilitations (resident)	No. of system rehabilitations (non-resident)	Population or no. of houses served (resident)	Population or no. of houses served (non-resident)	Number of Conventional Systems	Number of Innovative Systems
All OWTS (mixture of conventional and innovative systems)	R	O	R	O	O	O	O	O
Conventional OWTS (traditional gravity-fed tank and trench system)	R	O	R	O	O	O	R	NA
Innovative OWTS (any type of OWTS with technology superior to a conventional OWTS)	R	O	R	O	O	O	NA	R
Clustered systems	R	O	R	O	O	O	NA	NA